

The background of the slide features the official seal of Air University. It is a circular emblem with a blue field containing a white sword pointing upwards. Behind the sword are a pair of golden wings. The words "AIR UNIVERSITY" are written in white across the center of the blue field. A circular border around the seal contains the text "INTELLECTUAL AND LEADERSHIP CENTER OF THE AIR FORCE" in a light gray font.

AY11 Continuous Process Improvement for Strategic Leaders IP04 - ABC Simulation

Department of Leadership and Strategy

We Produce the Future

***Col PJ McAneny
AWC Faculty***



Leaders as Teachers



Develop America's Airmen Today ... for Tomorrow

- If you are going to lead transformational change in your unit...Airmen down to the lowest level must understand the basic Lean concepts.
- This very simple and inexpensive demonstration can serve as a CAPSTONE simulation for your Airmen.
- It allows you to teach in half a day, everything 95% of your personnel will ever need to understand about CPI tools.
- We'll go through it performing two iterations to demonstrate what can be taught.
- I'll post all the notes/slides for conducting this exercise on the M: Drive (in the usual spot) after class so you can take with you after AWC.



Process Simulation #1



Develop America's Airmen Today ... for Tomorrow

Produce Customer Requirement:

- Deliver 15 sheets of paper.
- Must contain English alphabet.
- Must be completely legible.
- Must contain original lettering.

Teams of 5 workers plus a Customer (Timer)

Instructions:

- Worker A gets 3 packs of 5 sheets. Write the A-E letters of the alphabet on each sheet. Once complete, hand packet to worker B.
- Worker B will write the next letters F-T of the alphabet on the sheet.
- Worker C will write letters U-Z of the alphabet on the sheet, and hand the product to the QC.
- Worker QC will QC the product, and hand the sheet to the Boss who will “sign the product in” by putting initials in the upper right-hand corner.
- The Boss will then deliver the signed sheets to the customer.
- Customer tracks completion time of the 1st delivery and final product (15th sheet).



Discussion Points



Develop America's Airmen Today ... for Tomorrow

This simulation represents any manufacturing, MRO, or administrative processes where up to 26 steps are performed by 3 people/departments.

- How did that feel?
- Conceptually, was that different than what happens on a regular basis?
- What if that continued, as set-up? What would inventory begin to look like? How would the process evolve to include facilitation, expediting, tracking, etc.
- What if I am the new boss and I told you you needed to reduce your lead time to less than 1/3 (all 15 sheets in 2 minutes) and reduce resources? What would be the typical responses?



Focus on the Lean Tools



Develop America's Airmen Today ... for Tomorrow

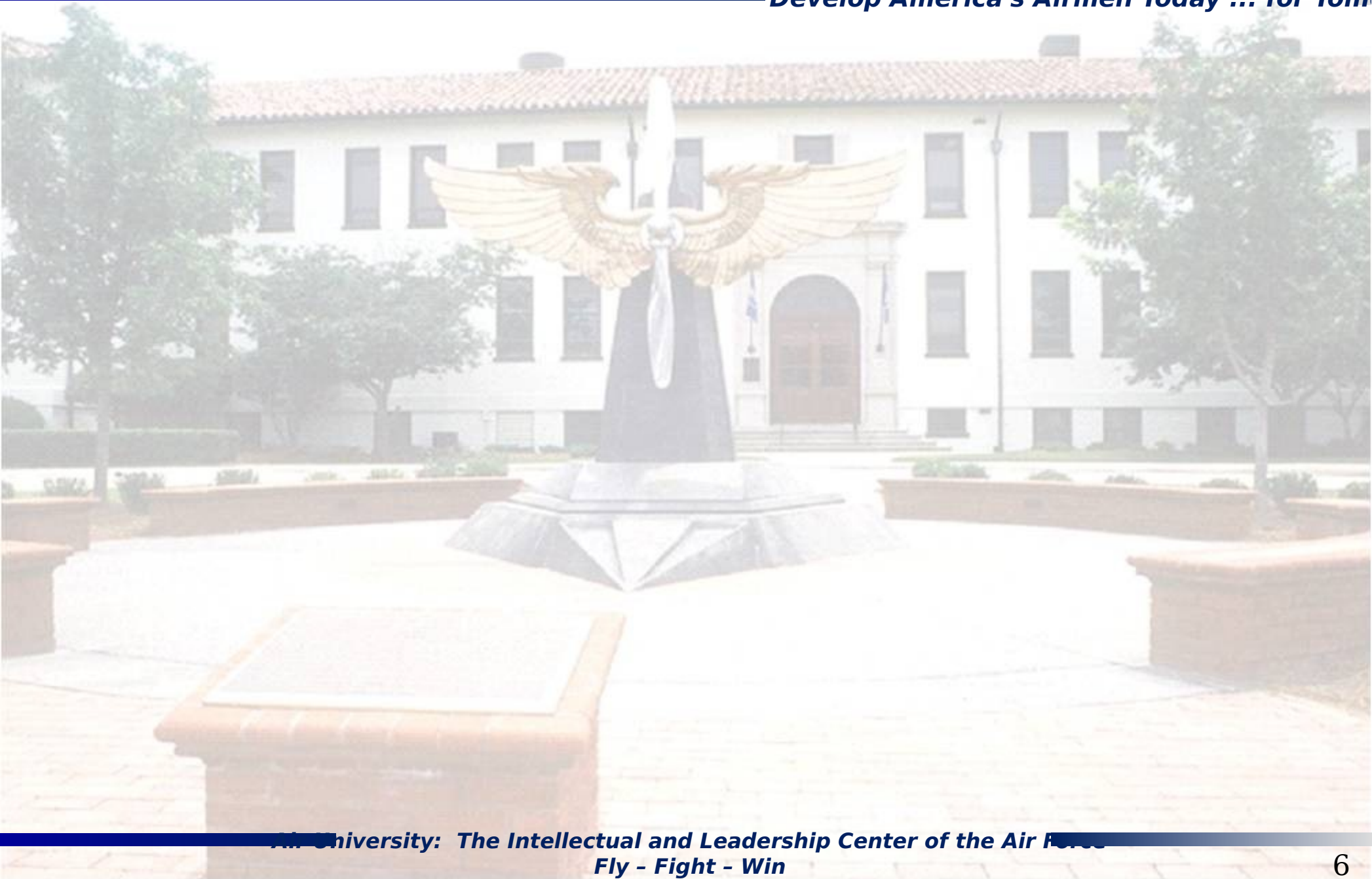
- VOC: Customer wants 15 units in 2 minutes (120 seconds)
- Then what is takt time?
- Value Stream Mapping
- Spaghetti Diagram
- Theory of Constraints
- Ideal State (constraint free)
- 5 Whys?



Design the Future Lean State and Implement



Develop America's Airmen Today ... for Tomorrow



Air University: The Intellectual and Leadership Center of the Air Force
Fly - Fight - Win



Design the Future Lean State and Implement



Develop America's Airmen Today ... for Tomorrow

- Single piece flow
- Set to takt time
- Cell design
- Standard work
- Kanban with Pull to prevent overproduction
- Non-value added steps removed



Process Simulation #2



Develop America's Airmen Today ... for Tomorrow

Produce Customer Requirement:

- Deliver 15 sheets of paper.
- Must contain English alphabet (use ALL CAPS w/ standard work).
- Must be completely legible.
- Must contain original lettering.

Teams of 4 workers plus a Customer (Timer)

Instructions:

- Worker A gets 15 sheets. Write the A-I letters of the alphabet on each sheet. Once complete, pass single sheet (not batches of 5) to Worker B as they are completed.
- Worker B will write the next letters J-R of the alphabet on the sheet.
- Worker C will write letters S-Z of the alphabet on the sheet, and hand the product to the Boss.
 - QC function eliminated with Standard Work
- The Boss who will “sign the product in” by putting initials in the upper right-hand corner and deliver the signed sheets to the customer.
- Customer tracks completion time of the 1st delivery and final product (15th sheet).
QC observes on what he/she witnessed this



Lean Tools Apply?



Develop America's Airmen Today ... for Tomorrow

- Strategic Alignment & VOC
- SIPOC
- TOC / Critical Chain
- Value Stream Mapping
- Value Added (NVA) Discussion
- Walk the Process
- Spaghetti Diagram
- Ideal State (constraint free)
- 5 Why's / Cause and Effect
- Check Sheet / Pareto
- Scatter Diagrams
- Future State
- 5S / Point Of Use
- Visual Management
- Standard Work
- Error-proofing
- Quick Change Over
- Total Production Mtc/Admin.
- Leveling
- Cells / One Piece Flow
- Kanban / Pull
- Priority Grid / Action Plan

The Intellectual and Leadership Center of the Air Force

We Produce the Future...

One Student at a Time

One Faculty Member at a Time

One Idea at a Time





Develop America's Airmen Today ... for Tomorrow

Back-Up Slides



STANDARD WORK



Develop America's Airmen Today ... for Tomorrow

A B C D E F G H I

J K L M N O P Q R

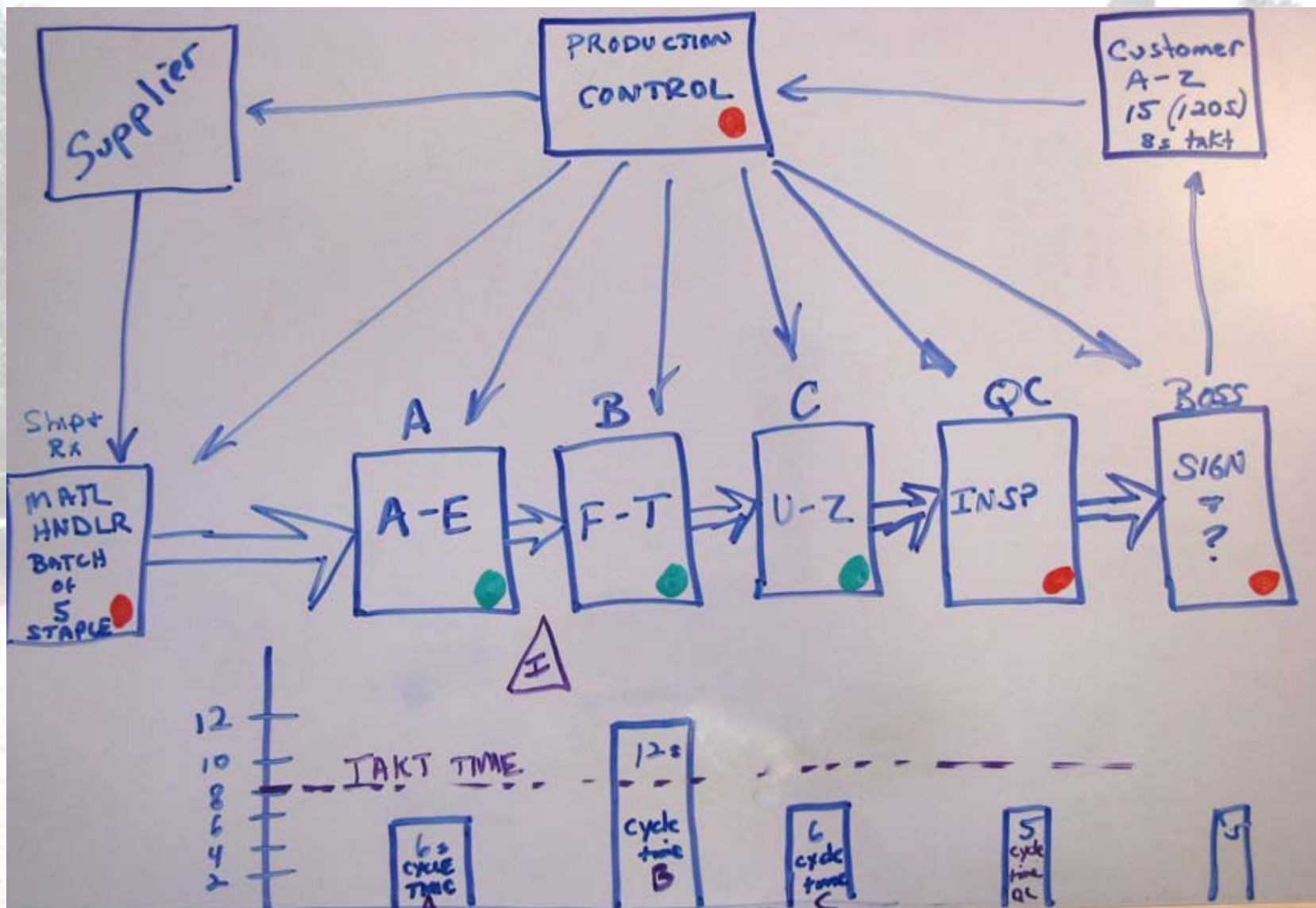
S T U V W X Y Z



Value Stream Map



Develop America's Airmen Today ... for Tomorrow

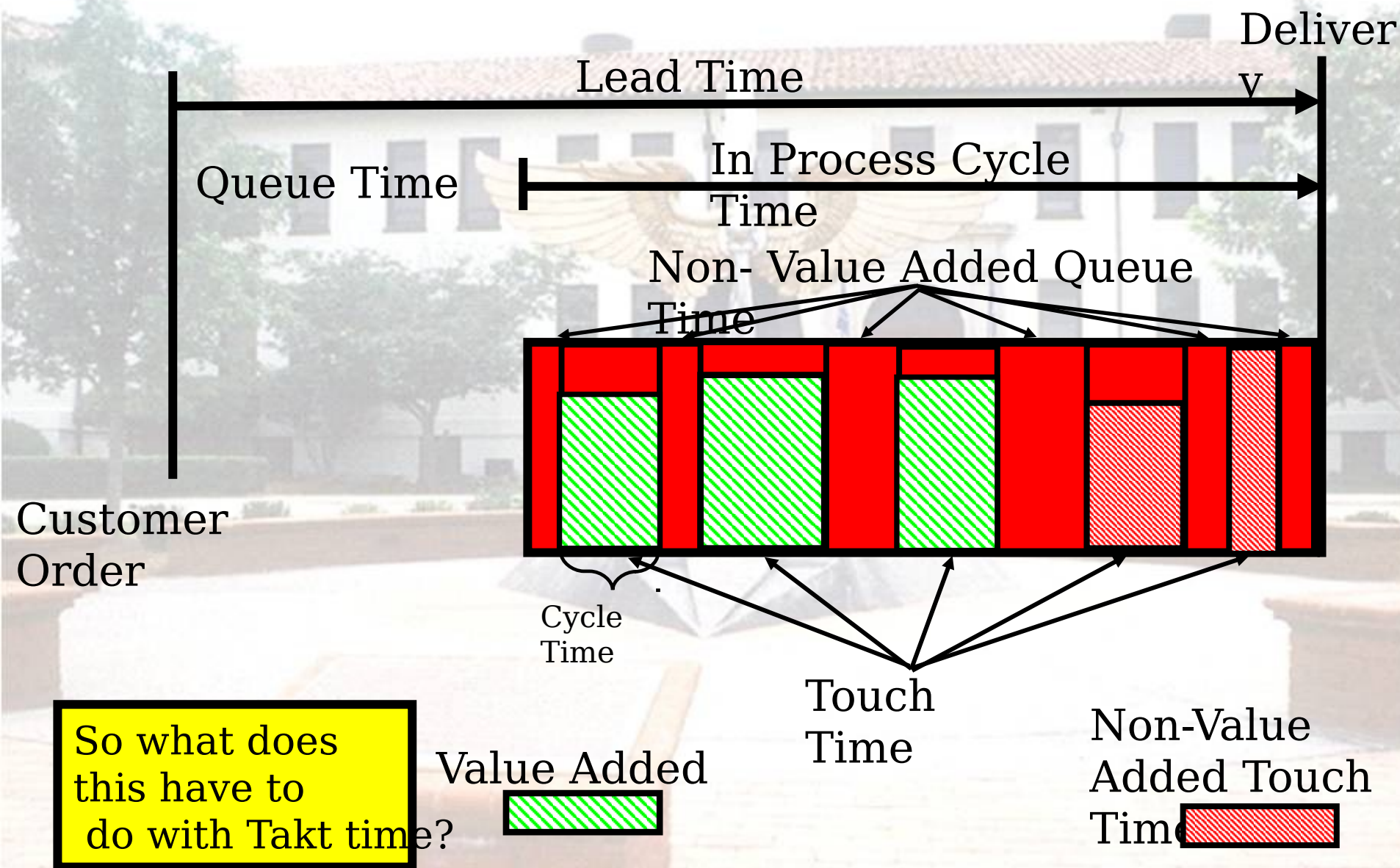




Categories of Time



Develop America's Airmen Today ... for Tomorrow





TEAM #1



Develop America's Airmen Today ... for Tomorrow

Worker A



TEAM #1



Develop America's Airmen Today ... for Tomorrow

Worker B



TEAM #1



Develop America's Airmen Today ... for Tomorrow

Worker C



TEAM #1



Develop America's Airmen Today ... for Tomorrow

Worker QC



TEAM #1



Develop America's Airmen Today ... for Tomorrow

BOSS



TEAM #1



Develop America's Airmen Today ... for Tomorrow

Customer



TEAM #2



Develop America's Airmen Today ... for Tomorrow

Worker A



TEAM #2



Develop America's Airmen Today ... for Tomorrow

Worker B



TEAM #2



Develop America's Airmen Today ... for Tomorrow

Worker C



TEAM #2



Develop America's Airmen Today ... for Tomorrow

Worker QC



TEAM #2



Develop America's Airmen Today ... for Tomorrow

Boss



TEAM #2



Develop America's Airmen Today ... for Tomorrow

Customer